

IN THE CLAIMS:

Please cancel claims 1-21 and 42-46 without prejudice or disclaimer to the filing of one or more divisional applications directed to the subject matter thereof.

Claims 22-24, 27-30, 33-38, 40, 41, 47, 50 and 51 have been amended herein to clarify the nature of the invention with respect to the references as applied, and new claims 52 and 53 added to recite subject matter deleted from other dependent claims. Please note that all claims currently pending and under consideration in the referenced application are shown below. Please enter these claims as amended. This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

Claims 1 through 21 (Canceled).

22. (Currently Amended) A sponge liner for use in a sponge core barrel assembly, the sponge core barrel assembly including an inner barrel assembly formed of a first material and having a bore extending therethrough, the sponge liner comprising:

a tubular sleeve having a longitudinal axis, formed of a second material and having an outer cylindrical surface sized and configured to be slidably disposed in the bore of the inner barrel assembly and an inner cylindrical surface, the outer cylindrical surface and the inner cylindrical surface being on opposing sides of a wall having a thickness, the tubular sleeve further including at least one groove formed in an inner cylindrical surface thereof and extending into the thickness of the wall, the at least one groove having a cross-sectional shape; and

an annular sponge layer formed of a material adapted to absorb at least one specified reservoir fluid, the annular sponge layer including an interior cavity and an outer cylindrical surface secured to the inner cylindrical surface of the tubular sleeve, the annular sponge layer extending into the at least one groove.

23. (Currently Amended) The sponge liner of claim 22, wherein the at least one groove comprises a groove configured in a helix about the inner cylindrical surface of the tubular sleeve, ~~a groove extending longitudinally along the inner cylindrical surface of the tubular sleeve,~~ or a groove extending circumferentially along the inner cylindrical surface of the tubular sleeve.

24. (Currently Amended) The sponge liner of claim 22, wherein the cross-sectional shape of the at least one groove is ~~selected from a group consisting of~~ a dove-tail shape, ~~a generally circular shape, and a generally elliptical shape.~~

25. (Previously Presented) The sponge liner of claim 22, wherein the second material comprises a material identical to the first material or a material exhibiting a rate of thermal expansion substantially equivalent to a rate of thermal expansion of the first material.

26. (Previously Presented) The sponge liner of claim 22, further comprising a plurality of perforations extending through the tubular sleeve.

27. (Currently Amended) The sponge liner of claim 22, further comprising a shaped contour extending in nonperpendicular relationship to the longitudinal axis of the tubular sleeve on at least one end of the sponge liner, the shaped contour configured to mate with a correspondingly shaped contour on an end of a second, adjacent sponge liner, wherein the shaped contour on the sponge liner and the correspondingly shaped contour on the second sponge liner are cooperatively configured to provide an interlocking end-to-end connection between the sponge liner and the second sponge liner.

28. (Currently Amended) The sponge liner of claim 27, wherein the shaped contour on the at least one end of the sponge liner and the correspondingly shaped contour on the end of the second sponge liner ~~are selected from a group consisting of~~ each comprise a bevel contour, ~~a generally parabolic contour, and a tongue-in-groove.~~

29. (Currently Amended) The sponge liner of claim 22, further comprising a longitudinally extending layer of webbing material disposed in the annular sponge layer.

30. (Currently Amended) The sponge liner of claim 29, wherein the longitudinally extending layer of webbing material is disposed in the annular sponge layer at a location proximate an interior surface thereof bounding the interior cavity.

31. (Previously Presented) A sponge liner for use in a sponge core barrel assembly, the sponge core barrel assembly including an inner barrel assembly formed of a first material and having a bore extending therethrough, the sponge liner comprising:
a tubular sleeve formed of a second material and having an inner cylindrical surface and an outer cylindrical surface sized and configured to be slidably disposed in the bore of the inner barrel assembly, the second material exhibiting a rate of thermal expansion substantially equivalent to a rate of thermal expansion of the first material; and
an annular sponge layer formed of a material adapted to absorb at least one specified reservoir fluid, the annular sponge layer including an interior cavity and an outer cylindrical surface secured to the inner cylindrical surface of the tubular sleeve.

32. (Previously Presented) The sponge liner of claim 31, wherein the second material comprises a material identical to the first material.

33. (Currently Amended) A sponge liner for use in a sponge core barrel assembly, the sponge core barrel assembly including an inner barrel assembly having a bore extending therethrough, the sponge liner comprising:
a longitudinally extending tubular sleeve having an inner cylindrical surface and an outer cylindrical surface sized and configured to be slidably disposed in the bore of the inner barrel assembly;
an annular sponge layer formed of a material adapted to absorb at least one specified reservoir fluid, the annular sponge layer including an interior cavity and an outer cylindrical surface secured to the inner cylindrical surface of the tubular sleeve; and

a longitudinally extending layer of webbing material disposed in the annular sponge layer about at least a portion of a circumference of the annular sponge layer.

34. (Currently Amended) The sponge liner of claim 33, wherein the layer of webbing material is disposed in the annular sponge layer at a location proximate an interior surface thereof bounding the interior cavity.

35. (Currently Amended) An integrated sponge barrel for use in a sponge core barrel apparatus, comprising, prior to disposition of a core sample therein: at least one longitudinally extending inner tube section having an inner cylindrical surface; and an annular sponge layer constructed of a material adapted to absorb at least one specified reservoir fluid, the annular sponge layer including an interior cavity and an outer cylindrical surface secured to the inner cylindrical surface of the at least one inner tube section; wherein the at least one inner tube section is sized and configured for direct disposition in an outer barrel assembly without a surrounding inner barrel.

36. (Currently Amended) The integrated sponge barrel of claim 35, further comprising at least one groove formed in the inner cylindrical surface and extending into a thickness of a wall of at least one inner tube section, the at least one groove having a cross-sectional shape, the annular sponge layer extending into the at least one groove.

37. (Currently Amended) The integrated sponge barrel of claim 36, wherein the at least one groove comprises a groove configured in a helix about the inner cylindrical surface of the at least one inner tube section, ~~a groove extending longitudinally along the inner cylindrical surface of the at least one inner tube section~~, or a groove extending circumferentially along the inner cylindrical surface of the at least one inner tube section.

38. (Currently Amended) The integrated sponge barrel of claim 36, wherein the cross-sectional shape of the at least one groove is ~~selected from the group consisting of a dove-tail shape, a generally circular shape, and a generally elliptical shape.~~

39. (Previously Presented) The integrated sponge barrel of claim 35, further comprising a plurality of perforations extending through the at least one inner tube section.

40. (Currently Amended) The integrated sponge barrel of claim 35, further comprising a longitudinally extending layer of webbing material disposed in the annular sponge layer.

41. (Currently Amended) The integrated sponge barrel of claim 40, wherein the longitudinally extending layer of webbing material is disposed in the annular sponge layer at a location proximate an interior surface thereof bounding the interior cavity.

Claims 42 through 46 (Canceled).

47. (Currently Amended) A method of constructing an inner barrel assembly for a sponge core barrel apparatus comprising securing a layer of sponge material adapted to absorb at least one specified reservoir fluid directly to an interior cylindrical surface of the inner barrel assembly prior to disposition of a core sample therein.

48. (Previously Presented) A method of eliminating differential thermal expansion between an inner barrel assembly of a sponge core barrel apparatus and at least one sponge liner disposed in the inner barrel assembly, the at least one sponge liner including a layer of sponge material secured to an interior cylindrical surface of a tubular sleeve, comprising:
constructing the inner barrel assembly of a first material; and
constructing the tubular sleeve of the at least one sponge liner from a second material exhibiting a rate of thermal expansion substantially equivalent to a rate of thermal expansion of the first material.

49. (Previously Presented) The method of claim 48, further comprising constructing the tubular sleeve of a material that is identical to the first material.

50. (Currently Amended) A method of reducing friction between a core sample and an interior wall of ~~an~~ tubular, longitudinally extending inner barrel of a core barrel assembly, at least a portion of the interior wall comprising a layer of sponge material adapted to absorb at least one specified reservoir fluid, the method comprising disposing a longitudinally extending layer of webbing material in the layer of sponge material ~~to strengthen the layer of sponge material~~.

51. (Currently Amended) The method of claim 50, further comprising disposing the longitudinally extending layer of webbing material in the layer of sponge material at a location proximate an interior ~~chamber of the inner barrel~~ surface thereof.

52. (New) The sponge liner of claim 22, wherein the at least one groove comprises a groove extending longitudinally along the inner cylindrical surface of the tubular sleeve.

53. (New) The integrated sponge barrel of claim 36, wherein the at least one groove comprises a groove extending longitudinally along the inner cylindrical surface of the tubular sleeve.